EVALUATION OF DIFFERENT QUECHERS FOR DETERMINATION ORGANOCHLORINE PESTICIDES IN CARROT

L. Correia de Sá, *MAC Student, FCNAUP, University of Porto, Portugal.*
V. C. Fernandes, *REQUIMTE, ISEP, PORTO, Portugal and Investigation Centre (CIQ), FCUP, Portugal*
C. Calhau, *FMUP, University of Porto, Portugal*
V. F. Domingues, *REQUIMTE, ISEP, PORTO, Portugal*
C. Delerue-Matos, *REQUIMTE, ISEP, PORTO, Portugal*

Background and Aims: The Organochlorine Pesticides (OCPs) due to their extensive use in agriculture and also because of their chemical stability and slow biodegradation became ubiquitous pollutants. Overall use has been restricted since the late 1970s[1]. However these biologically hazardous chemicals still persist and move throughout the biosphere[2].
Most of the OCPs are therefore included in the organic persistent pollutants which are characterized by exceeding long half-lifes in the environment[3] and to have potential biomagnification capacity through food chain[4].
To OCPs has been associated a range of both acute and chronic health effects, such as cancer, birth defects, neurological damage and in addition they are suspected to act as endocrine disruptors[5]
The aim of this study was to develop a method to evaluate OCPs in carrots**.**
Methods: The analyzed compounds include: HCH (α,β,δ), HCB, lindane, aldrin, 4.4'-DCBP, α-endosulfan, dieldrin, *p-p'*-DDE, endrin, β-endosulfan *p-p'*-DDD, *o-p'*-DDT and methoxychlor. The extraction was performed with QuEChERS. Gas chromatography with ECD was employed for the determination of pesticides.
Results: Five types of QuEChERS with different compositions were also tested. The chosen QuEChERS was composed of 4g MgSO4, 1g NaCl, 1g Na3Citrate 2H2O, and 0,5g Na2HCitrate 1 ½ H_2O.
With the chosen QuEChERS linear calibration curves were obtained for the 14 pesticides and the internal standard (IS). Concentrations ranging from 5 to 70µg/kg in carrots were studied**.**
Conclusions: The samples homogenization influences the results reproducibility therefore it can be a crucial step for the analysis.
The sample preparation procedures, QuEChERS, can be applied to carrots for OCPs analysis.
References: Borrell A., Garcia-Sola` A., Aguilar A., Garcıa N.A., Crespo E.A. *Organochlorine Residues in South American Sea Lions, Otaria flavescens (Shaw, 1800): Bioaccumulation and Time Trends*. Bull Environ Contam Toxicol. 2010; Vol. 84:731–737.

Bentzen T.W., Muir D.C.G., Amstrunp S.C., O'Hara T.M. *Organohalogen concentrations in blood and adipose tissue of Southern Beaufort Sea polar bears*. Science of the Total Environment.2008; Vol.406 (1-2): 352-367.

Gonzalez M., Miglioranza K. S. B., de Moreno J. E. A., Moreno V. J. *Organochlorine pesticide residues in leek (Allium porrum) crops grown on untreated soils from an agricultural environment.* J. Agric. Food. Chem. 2003. Vol.51 (17); 5024-5029.

Gonzalez M., Miglioranza K. S. B., de Moreno J. E. A., Moreno V. J. *Evaluation of conventionally and organically produced vegetables for high lipophilic organochlorine pesticide (OCP) residues.* Food and Chemical Toxicology. 2005; Vol.43 (2): 261-269.

Fernandes V., Domingues V., Mateus N., Delerue-Matos C. *Organochlorine pesticide residues in strawberries from integrated pest management and organic farming.* J. Agric. Food Chem.2011; in press.